JANUARY 1958

# the Airman

OFFICIAL JOURNAL OF THE AIR FORCE

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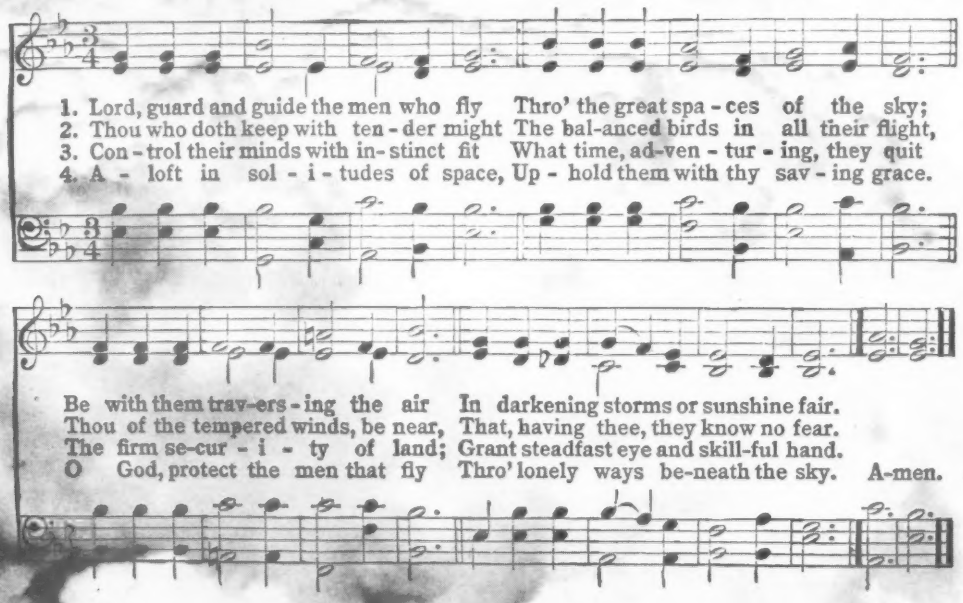
# THE OFFICIAL AIR FORCE HYMN

## Lord, Guard and Guide the Men Who Fly

Quebec L. M.

MARY C. D. HAMILTON, 1915 — HENRY BAKER, 1835-1910


1. Lord, guard and guide the men who fly Thro' the great spa - ces of the sky;
2. Thou who doth keep with ten - der might The bal-anced birds in all their flight,
3. Con - trol their minds with in- stinct fit What time, ad-ven - tur - ing, they quit
4. A - loft in sol - i - tudes of space, Up - hold them with thy sav - ing grace.
Be with them trav-ers - ing the air In darkening storms or sunshine fair.
Thou of the tempered winds, be near, That, having thee, they know no fear.
The firm se-cur - i - ty of land; Grant steadfast eye and skill-ful hand.
O God, protect the men that fly Thro' lonely ways be-neath the sky. A-men.

"Lord, Guard and Guide the Men Who Fly" was adopted as the official Air Force hymn at an Air Force-wide conference of staff chaplains held in Washington, D. C., in October 1954. Words for the hymn were written by Mary Hamilton in 1915. They were set to the music of "Quebec," a hymn composed by Sir Henry Baker while a student at Exeter College, Oxford, in 1854. In 1861 he submitted the hymn in a contest sponsored by the London Penny Post which was seeking a setting for the hymn "Son of My Soul." The music is also used for "O Lord of Hosts, Almighty King," written by Oliver Wendell Holmes in 1861.

The official USAF hymn is included in the repertoire of the Air Force Band's "Singing Sergeants." It is also the opening hymn on "Air Force Chapel of the Air," a weekly program televised from Washington every Sunday morning. The hymn appears on page 446 of the (1942) Army and Navy Hymnal as Hymn No. 478.

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OFFICIAL JOURNAL OF THE AIR FORCE

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## IN THIS ISSUE

Nationally known artist Alex Ross' painting, *Alaska Alert*, appearing on this month's cover, was inspired by a 1954 trip to Elmendorf AFB, Anchorage, Alaska.

"The mountains," he explains, "place the scene in Alaska. The Air Force story is told by the plane, and our country on guard is represented by the guard in the foreground." The original painting hangs in the Pentagon. Ross, born in Scotland in 1909, has painted covers and illustrations for many leading American magazines and has exhibited in one-man and group shows throughout the U. S.

In the article *ARDC—Guardian of the Future*, staff writer M/Sgt. Ed Blair emphasizes the increasing importance of the USAF research and development programs. Blair's treatment of the weapon system management concept provides an easily understood explanation of a somewhat complex, but important program.

Dave Karten, former assistant editor of *Combat Crew*, is eminently qualified to present the story of the new Boeing KC-135 *Stratotankers*. In *The Man on the "Flying Trapeze"* Karten tells of a typical refueling mission and an aircrew's reaction to the high-speed jet tankers.

Discussions about the Air Force's basic training program usually center around the question, "What do they teach in basic these days?" T/Sgt. Hal Craven went to Lackland to find out and wrapped up the answer in *The Great Transition*. In a worn, but appropriate nutshell, basic training is sporting a new look.

To round out this first issue of the new year are *Tops in Blue*, which takes you on a visit to the Air Force Academy; *An Old Job and a New Year*, a pictorial look over the shoulder and at the goal ahead; and *A Toast to the Host*, the introduction to a new series on memorials and shrines dedicated to the airmen of the world.


USAF PERIODICAL 30-15

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THE AIRMAN is primarily a medium for the exchange of ideas and information among Air Force personnel. Readers are encouraged to submit articles, short subjects, photographs and artwork. All contributions will be given consideration; suggestions and criticisms are welcomed. Opinions expressed by individual contributors do not necessarily reflect the official viewpoint of the Department of the Air Force. All photographs are official USAF photos unless otherwise designated.

Use of funds for printing this publication approved by the Secretary of the Air Force and the Director of the Bureau of the Budget July 5, 1956.

## COMMISSION COMPETITION

Sir: *Inasmuch as* THE AIRMAN *is an exchange for ideas, I would like to advance a proposal which came to me after reading your article, "A Little Learning," in the Sept. 1957 issue.*

*According to present policy, an airman who is over 26 years old and married has no way of competing for a commission. (Excluding M/Sgts. who may try for warrant, and female personnel who may receive direct appointments.)*

*As a retention and education incentive, it is proposed that the Air Force look into the possibility of making direct commissions available to airmen who have earned a degree while on active duty.*

Name Withheld

The following information was obtained from the Directorate of Personnel Planning, DCS/P, Hq USAF in answer to the above letter.

The feasibility of establishing a direct-commission program for senior noncommissioned officers has been the subject of repeated and exhaustive studies over the past five years. The problems involved revolve around the requirements of the Air Force, the practical application of such a program and utilization of the officer group generated by it, and the incentive value of such a program to our more highly qualified noncommissioned officers.

A careful study indicates that the enactment of a program, as suggested by the writer, would be inadvisable at this time for several major reasons, as follows:

Major Air Force procurement programs have the primary objective of satisfying specific requirements. The two avenues open to enlisted personnel to attain commissioned status are provided by the OCS and Aviation Cadet programs.

Current officer procurement programs (ROTC, Aviation Cadet, Officer Candidate School, recall, and direct appointment for specialists) will fulfill Air Force requirements through fiscal year 1958.

There is now a backlog of applications on file from Reserve officers for recall to active duty. The majority of these cannot be approved due to budgetary limitations and lack of specific officer spaces.

The recent directive reducing overall officer authorizations and Air Force planning exercises indicate a reduction rather than an increase in future Air Force officer authorizations.

Technical progress increases the Air Force requirement for development of ever larger numbers of truly qualified supervisors, highly skilled in specialized fields. From his entry into service, the airman's training and assignment must, of necessity, be geared toward this end. The very nature of this restrictive utilization limits his opportunity for attainment of those qualifications necessary to progress to the management level.

The Air Force has a continuing requirement for highly trained intermediate supervisors, i.e. the senior noncommissioned officer and warrant officer. At 10 to 15 years of service this supervisor is just beginning to reach his peak of performance and usefulness to the Air Force. Idealistically, the specialized training of these personnel should be supplemented by the broader training appropriate to management.

This is now done, where practical, for senior noncommissioned officers and warrant officers. However, their logical advancement is within the same area of training and assignment, hence, the Warrant Officer Program, the stature of which is growing.

The need for a direct-appointment program, considering the current officer procurement programs, can be limited to "career incentive." The incentive problem could be solved by increasing the pay grades for master sergeants and warrant officers, as recommended by the Cordiner Committee, and by increasing the number of career fields and spaces for warrant officers, as currently programmed. Along with such programs, a special effort should be made to point out to our airmen and warrant officers the fact that progression up to and through warrant officer grades, which carry pay and allowances nearly equivalent to that of the first four officer grades, is a real accomplishment in itself. Further, technical and specialists requirements for successful service in the grades of master sergeant and warrant officer are exacting and indicative of highly successful careers.

★ ★ ★

## MORE ON "HIGH FLIGHT"

Sir: *We were interested to note that the Letters to the Editor* (THE AIRMAN, October issue) *mention two effective recruiting tools, the song,* "U. S. Air Force Blue," *and the poem,* "High Flight." *Although, as you say,* "U. S. Air Force Blue" *has not been recorded for public sale, its acceptance by disc-jockeys and other radio-TV personalities to whom copies have been supplied by the Air Force has been most enthusiastic. These platters have gone so fast our initial supply is exhausted. However, we do have available copies of the band arrangement and the choral arrangement of the song which have also been very well received by people in the music world, particularly high school bands and choral groups. Any member of the Air Force who wishes to secure copies of these arrangements for his personal use or to give to civilian band or choral leaders may obtain them by writing to the Commander, 3500th USAF Recruiting Wing, ATTN: Director, Advertising and Publicity, Wright-Patterson AFB, Ohio.*

*The recruiting service also has available several hundred copies of the poem,* "High Flight," *attractively printed on parchment-like paper. These are suitable for framing and would be most appropriate for use in pilots' lounges, day rooms, squadron offices, or civilian flying clubs. We will furnish copies of these to Air Force personnel as long as they last, but must limit them to one per requestor.*

*Congratulations . . . on an excellent job of "spreading the word."*

Col. John E. Condron
Wright-Patterson AFB, Ohio

Sir: *In reference to the column, "Letters to the Editor,"* THE AIRMAN, *October issue, Col. J. F. Rydstrom, Scott AFB, Ill., will be pleased to know that the words of* "High Flight" *were set to music by Deems Taylor and played on a concert given over NBC or CBS radio broadcasting network four years ago.*

Daniel Gorsky
Olmstead AFB, Pa.

Unfortunately, neither the NBC or CBS Washington office could confirm the information forwarded by Mr. Gorsky. Our research sources have been equally unproductive to date. However, officials at the Library of Congress assured the editors that several such musical compositions are in their files—none, however, by Deems Taylor.

USAF Band sources indicate that S/Sgt. William Purcell composed a musical background for the poem in 1948, and in the past, the band has often used this work on their nationwide broadcasts as "mood music" behind a recitation of Pilot Officer John Magee's classic.

# ARDC—GUARDIAN OF THE FUTURE

## PROPER USE OF RESEARCH AND CONSEQUENT DEVELOPMENT SPELL SAVINGS IN MONEY, TIME, AND LIVES

by M/Sgt. Ed Blair

SLIGHTLY more than a year ago the Bell X-2 rocketed to a record altitude of 126,000 feet and a speed of 2,148 m. p. h. above the Air Force Flight Test Center at Edwards AFB, Calif. Capt. Iven Kincheloe, pilot of the tiny research aircraft on its altitude flight, was living in an artificial, manmade environment with 99 percent of the earth's atmosphere beneath him. The Air Force has nominated him to pilot the North American X-15, a new research vehicle, to more than twice that speed and altitude.

Military aviation was born less than half a century ago at Fort Myer, Va., just across the Potomac from the Nation's capital. The Signal Corps' Aeronautical Division was already a year old before the Wright *Flyer* wobbled to a shaky height of 140 feet and flew cross-country at 42 m. p. h. for 10 miles—to Alexandria, Va., and return. The feat was viewed as a stunt by most observers, but a few saw real military potential in the accomplishment.

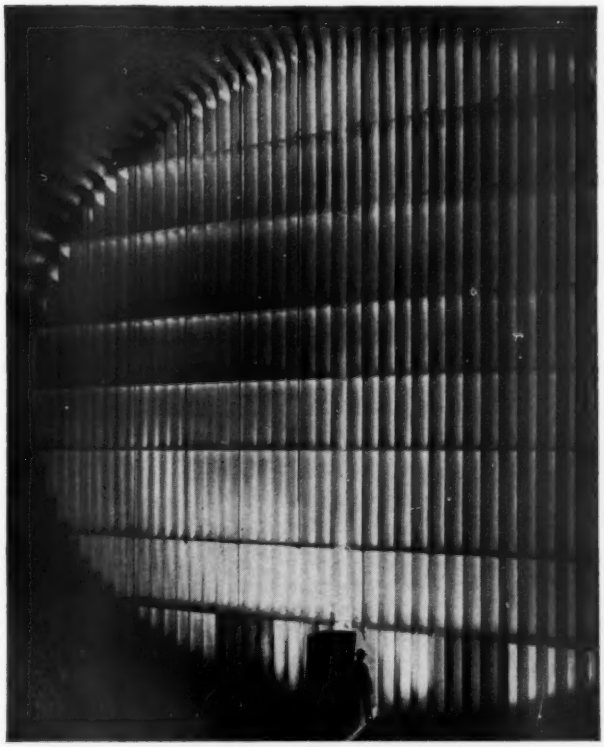
Between these two extremes of manned aircraft flight lies an amazing era plotted against the still rising graph of aerial progress.

As recently as 1947 only research aircraft were capable of reaching the speed of sound in level flight. Since then, forward steps have been so rapid that only a closely supervised program could properly catalog, sift, discard, and adopt the advances applicable to military utilization.

To assure orderly progress, determine the channels of research, and ferret out future needs, the Air Research and Development Command was born. ARDC celebrates its seventh anniversary this month and its place in the military scheme of things is well established.

Modern aeronautics cuts across more scientific and technical fields than any other area of human endeavor. Practically any contribution to man's knowledge of life functions and the universe in which he lives can be applied, in some manner, to the aeronautics field.

ARDC's research ranges from the effects of diet on an airman's ability to withstand temperature extremes to the physiological and psychological effects of weightlessness in space. It sweeps from atomic structure and properties of matter through the nuclear propulsion of aircraft. It explores sunspots in relation to communication and guidance systems, and gravity in relation to flight instruments. It probes jet stream winds and icing conditions.



**A two-lane highway—or an operational jet engine—can fit inside this transonic wind tunnel at Arnold Air Development Center. The vanes control the airflow.**

"These are days of scientific and technical urgency—urgency brought to a peak by the Soviet *Sputnik*," says ARDC's Commander, Lt. Gen. Samuel E. Anderson, who has been called the Air Force's "Vice President in Charge of the Future." "Although only a scientific tool, *Sputnik* is a symbol of the Soviet threat to the scientific and technical lead which has created the qualitative superiority of American airpower."

ARDC's attack on astronautical and aeronautical problems is four-pronged; two in research, two in development. The furor caused by the Russian space satellites has thrown a spotlight on the heretofore secluded field of research and the unaccustomed glare has raised the question:

"What is research?"

No single definition could suffice, but for the sake of simplicity, it might best be defined as a "search for knowledge." A combination of two separate, distinct fields—basic and applied—research provides the primary launching site from which every practical advance is made.

ARDC's job starts with a basic exploratory search for new scientific knowledge—knowledge for which there is no specific requirement nor military use. But without that primary knowledge to pave the way, civilization could come to a standstill. It might well be likened to petroleum processing; without the raw crude oil from the ground, no finished petroleum goods would be possible.

The end product of basic studies is then refined and fitted into a specified niche. This is the application principle, the development of advanced engines, airframes, and other components. By ARDC officials, applied research is tabbed improvement in the state of the art.

The two remaining tines of the four-pointed R & D program are concentrated in the development stage. Once the weapon system has been placed in the inventory, there is a continuing need for engineering and supporting research to make certain of maximum performance. ARDC defines this step as exploitation of growth potential.

Finally, the engineering deficiencies or "bugs" that show up in operational use of equipment must be eliminated. This means modifications to improve efficiency, maintenance, and safety of operation. The constant and overriding objectives are to improve quality, increase reliability, and reduce development time.

### Contractual Operations

It would be economically impossible for the Air Force to try to employ, on a full-time basis, all the scientists and engineers necessary for such a program. Neither could USAF afford to maintain the varied and complex equipment needed to carry on such research in virtually every field of science.

Consequently, more than 80 percent of the $600 million allocated to ARDC for research and development is expended on contracts with civilian industrial or educational research organizations.

Approximately 220 universities, colleges, and nonprofit institutions, and over 1,500 industrial concerns have ARDC contracts. Some fall in each division of the research field.

For example, Batelle Institute, Columbus, Ohio is presently conducting a meteorite study. Scientists are examining samples from different parts of the same meteor in hopes that crystal-structure variations will lead to knowledge that will produce better alloys for use at high temperatures.

Assume a sound theory results from these studies. The material will be forwarded to ARDC which in turn will channel it into another hopper. New contracts may be let and the theory of the basic study will be applied and studied for practicality.

Within the command itself, approximately 19,000 scientists, engineers, and technicians are engrossed in various stages of the research and development program. The remaining 40,000 personnel are support people who perform housekeeping duties, procurement, and other services to permit technicians to devote full attention to their primary jobs. Like all other commands, ARDC has a retention problem.

Lt. Gen. Samuel E. Anderson, ARDC's "Vice President in Charge of the Future," and Maj. Gen. L. I. Davis, Commander of the Missile Development Center, examine a *Snark* model.

Unlike other commands, ARDC is essentially a management tool—a catalytic mixing bowl in which is combined a pinch of the knowledge of this agency or educational institution with a dash of the skill of that scientist or industry. The product which finally emerges from the oven is a loaf of specifications and procurement data furnished to Air Materiel Command, the USAF's purchasing agent, for use in ordering quantity production of a complete weapon system.

### A Modern Saga

Weapon system? Like research, a term often used and seldom defined. The Air Force dictionary calls it "a total entity consisting of an instrument of combat (a single unit of striking power), such as a bomber or guided missile, together with all related equipment, supporting facilities, and services, required to bring it upon its target or to the place where it carries out the function for which it was built." Its progression from an embryonic idea to a functional, operational unit, is a 20th century industrial saga.

Integrated development is new; the system itself is not. An archer with his bow and a quiver of arrows was a weapon system. The arrow was the single unit of striking power; the bow, related equipment. The quiver of arrows on his back, the lunch inside his tunic, the leather sandals he wore, the armor on his forearm, and his mind and body constituted the supporting facilities. They were his guidance, logistics, and supply systems. Then, even as now, every striking unit needed a lot of support. The advent of missiles will not mean an appreciable change in this proven concept. The need for support to the "single unit" approach will remain consistent.

For a moment, let's deal in specifics. One of the newest

pieces of hardware in the USAF inventory is the Convair B-58 *Hustler*. The world's first supersonic bomber, it was built to cruise at speeds in excess of Mach 1—the speed of sound—and has reached speeds near Mach 2. Its four General Electric J-79 turbojet engines were tailored especially for this weapon. Full of advanced features, most still classified, the *Hustler* qualifies as more than just a supersonic bomber. It is the business end of an advanced weapon system and a product of the weapon system management concept.

Within this management concept the prime contractor is admitted to full partnership. ARDC furnishes the specifications and the operational requirements for the completed weapon system and makes available its facilities, and scientific, technical, and operational know-how. A Weapon System Project Office (WSPO) is set up to run interference on the paperwork and contracts, and to act as liaison between the contractors and the Air Force.

The prime contractor gathers about him subcontractors who will build powerplants, armament complexes, communications and electronic equipment, ground-support equipment, and tools. Training schedules and supply channels are established and everything proceeds simultaneously. The end product is a complete weapon system ready for combat.

Previously, each component and subsystem was contracted for separately by the Air Force and then "shotgun married"—modified until everything fitted together properly. The B-47, for instance, underwent 3,000 modifications in its first six years of existence in order to maintain its role as a high quality weapon system. The weapon system management concept is saving years of development time and thousands of the taxpayers' dollars.

In the case of the B-58, Convair contracted to develop and deliver the entire system—airframe and all its components, ground-support equipment, logistics, and trained personnel. A nationwide hunt produced subcontractors in every needed field. All told, more than 8,500 companies, including 6,000 small business concerns, contributed to the final product. More than 5,000 engineers worked on the system. ARDC and Convair fused their efforts into the vital "total entity." The B-58 prototype was delivered for testing in four and a half years from the day the contract was let.

Col. E. A. Pinson, Chief of Special Weapons Center's Biophysics Division, chalk talks on nuclear cloud penetration.

### Highly Coordinated

The nerve center of this research-management organization is at Headquarters, ARDC which recently moved from Baltimore to Andrews AFB, Md. A deputy commander maintains his office at Wright-Patterson AFB, Ohio thus assuring close coordination with Headquarters, AMC, a vital partner in the overall program.

Because of the importance and high priority of the intercontinental ballistic missile program, Maj. Gen. Bernard A. Schriever, Commander of the Air Force Ballistic Missile Division at Inglewood, Calif., is also a deputy ARDC commander. The missile program, as a matter of national policy, is under close supervision of the President and the National Security Council; therefore, General Schriever reports directly to the White House on the program's progress.

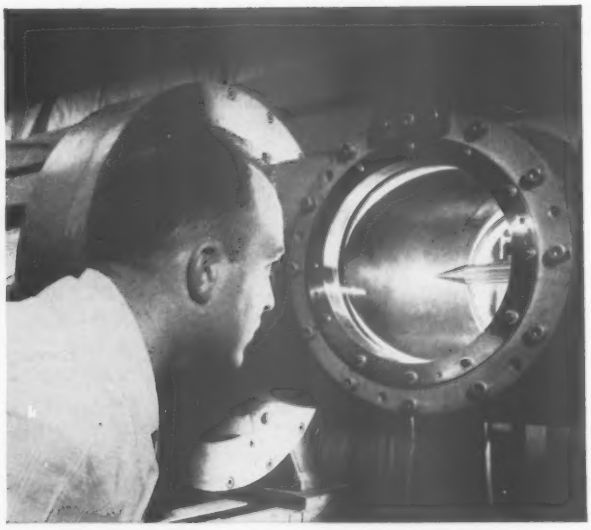
"The Ballistic Missile Division is as unique a management tool as the command itself," declares General Anderson. "AFBMD today manages the Air Force's highest priority program—development of long-range ballistic missiles.

"Assisted by Ramo-Wooldridge Corporation (a civilian contract firm) scientists and experts, AFBMD coordinates the efforts of some 75,000 personnel employed by prime and subcontractors for development of the Convair *Atlas* and the Martin *Titan* ICBMs, and the Douglas *Thor*, an intermediate-range ballistic missile."

The ballistic missile program which began about three years ago, aims to achieve an initial operational capability for all three weapon systems, General Anderson explains. Heretofore, in normal development of a weapon system there has been a time lag in bringing the separate elements together into a whole. But every part of the ballistic missile program is so coordinated with every other part that they all proceed simultaneously according to a pre-established schedule.

While a prototype is being developed, the tools, machines, and the plans to manufacture and test it are being built. While launching facilities are being designed, training plans are drawn up. While operational ground equipment is being blueprinted, the logistic support is being planned; from spare parts to maintenance, from trucks to base construction. Lt. Gen. C. S. Irvine, Air Force Deputy Chief of Staff, Materiel, sums up this meshing of gears in the missile program:

"While the *Thor* program is ahead of our ICBM programs, we expect to have operational copies of the *Atlas* in the relatively near future and *Titan* relatively soon thereafter. Further, and this is most significant, *we will also have the necessary operators and maintenance per-*



***Tunnel Hotshot*** **at Arnold Air Development Center simulates 11,000 m.p.h. and 15,000-degree temperatures to explore cooling methods for supersonic planes and missiles.**

*sonnel, compatible and reliable ground-support equipment, and the industrial back-up."*

Make no mistake, this fusing process isn't the result of desk work alone. The slip stick, the drawing board, and even the typewriter have their places but, in addition, ARDC operates 10 bases, or centers, where the remaining 20 percent of their budget is channeled.

These centers house laboratories and test facilities for contractors, government agencies such as the National Advisory Committee for Aeronautics, and ARDC use. These 10 centers represent an overall investment of approximately $2 billion, an investment too large for any single private concern to undertake.

Each of the centers has specific responsibilities and normally its activities are confined to a general scientific field. However, even at this level, the homogenization process is quite evident.

Wright Air Development Center (WADC), Wright-Patterson AFB, Ohio, is one of the world's most completely equipped facilities devoted exclusively to aeronautics. Its labs encompass every conceivable field of applied aeronautical research and development including aircraft, guided missiles, ground and airborne equipment, aeromedicine, aerial photography, and airborne electronics. The command itself was organized at this station and made its headquarters there for several months.

Arnold Engineering Development Center, Tullahoma, Tenn., features what may well be the world's most modern complex of wind tunnels. Flight conditions at altitudes of 80,000 feet and speeds of Mach 3 can be simulated on full-scale airframes and engines in the engine test facility. In addition, a new ramjet unit is being readied which will permit testing at Mach 4 speeds and even higher simulated altitudes. Additions with even greater capabilities have passed the blueprint stage and are scheduled to be placed in operation in the near future. AEDC is contract-operated.

The field of geophysics and electronics is the basic responsibility of the Air Force Cambridge Research Center near Boston, Mass. AFCRC supports a combined Air Force-Army-Navy project which covers all aspects of the air defense problem, but the broad area of concentration is on radiobiology, radiochemistry, and nuclear physics. Facts of the atmosphere and areas above 50,000 feet, where man must depend on artificially pressurized environment, constitute the main study areas in an effort to make future air travel a less complicated operation.

When SAC's Boeing B-52 *Stratofortresses* flew around the world last spring, the command's operations center at Offutt AFB, Nebr., kept in voice contact throughout the flight by means of a STRATCOM communications net. Rome Air Development Center, Griffiss AFB, N. Y., focuses its research task in the area which includes this network—ground electronics systems. Such items as the Nation's air defense radar network are under constant RADC scrutiny for application of new improvement principles. Rome's area also includes better airborne eyes and ears in the form of navigational systems, identification and countermeasures equipment, and automatic flight gear—all in the electronics field.

Two of ARDC's centers deal primarily with guided missiles. One, the Air Force Missile Test Center, Patrick AFB, Fla., is the site of most test launchings. Here missiles are tracked downrange for detailed observations at distances greater than 5,000 miles. While under management of the command, the range and its complex of tracking and instrumentation equipment is contract-operated.

The shorter range facilities at Holloman Missile Development Center, Holloman AFB, N. M., are devoted primarily to the testing of short-range birds. Target drones and related equipment are also a part of the daily routine, and it was here that Col. John P. Stapp, the "fastest man on earth" conducted his justifiably famous rocket sled experiments. Studies in space biology, also a function of the center, were epitomized by the recent 102,000-foot flight of Maj. David Simons while he was cocooned in a pressurized gondola suspended beneath a balloon to ascertain if man could live under such conditions.

The Special Weapons Center at Kirtland AFB, Albuquerque, N. M., mates the nuclear weapons to the weapon system. Concentration is in support of the Atomic Energy Commission and related government agencies, and the development and test of atomic and other special weapons used by the USAF. The 4950th Test Group (Nuclear), parent unit for the planes and crews of the Eniwetok tests, is working on methods designed to provide maximum safety for men and equipment during nuclear delivery missions. Members of this group are Air

Force experts on fallout, radiation, and kindred subjects.

When Air Proving Ground at Eglin AFB, Fla. was eliminated as a major command recently, its responsibilities for operational and suitability testing of Air Force hardware were transferred to ARDC. The old ARDC unit there, the Air Force Armament Center, became a division of the new Air Proving Ground Center. The division continues testing and development of conventional weapons and armament and its research is essential to such items as bombing tables. It exercises a major influence on bomb and projectile design.

Superior weapon systems, in spite of automation, are worthless masses of metal without men to push the buttons. This facet of the overall problem is in the realm of the Air Force Personnel and Training Research Center, Lackland AFB, Tex. Machines are built with the limitations of man in mind. AFPTRC determines the skills needed for a specified system, selects and classifies the men to be trained, and recommends an appropriate training curriculum to Air Training Command. The center classifies probable limitations and alerts the design engineers.

Fountainhead for the entire R & D program is concentrated in downtown Washington, D. C. As explained earlier, all applied research and development of weapon systems stems from basic or pure research. The Air Force Office of Scientific Research directs this exploratory program, concerning itself with the search for new knowledge, investigation of developments, and the channeling of usable information into ARDC development programs.

The Air Force Flight Test Center (AFFTC) at Edwards AFB, in California's Mojave Desert, by association, is probably the most familiar of the 10 ARDC centers. Home of the Experimental Flight Test School, its fame has been accentuated through the feats of such graduates as Maj. "Chuck" Yeager and Captain Kincheloe. But in addition to such well-known events as the first sonic flight, Edwards also houses huge rocket-engine test stands which handle static firing tests of guided missile power plants.

### It Bridges the Gap

Actually, AFFTC serves as a gigantic refining plant, the span between basic and applied research, in the field of operational aircraft themselves. Its function is as vital to aerial progress as the testing grounds of Detroit are to the automobile manufacturer.

Wind-tunnel testing is vital, but minute errors in calculations can be magnified out of all proportion when data are applied to the full-scale product. Obviously, then, it is mandatory to test theory on flyable aircraft. The result has been an entire series of such planes designed and flown to explore sonic and thermal thickets. Edwards has served as a base for all of them.

The Bell X-1, X-1A, X-2, and X-5; Douglas X-3; Northrop X-4; and Convair's XF-92, each, in its own turn, has produced significant developments which have since been incorporated into production aircraft.

**ARDC designs and tests artificial environments that enable man to live at the altitudes and speeds of modern weapon systems.**

Edwards will undoubtedly be in the news in the same field again in the future. North American Aviation is in the process of constructing a newer research aircraft, the X-15, which is designed to top both existing speed and altitude marks. Reliable sources have indicated it may reach records more than double those presently on the books.

Aside from these 10 centers, the command also maintains an Office of Aircraft Nuclear Propulsion—for obvious reasons. An Armed Forces Information Agency collects and catalogs technical information for defense agencies and their contractors. Twenty-five Field Liaison Offices maintain coordination with industry and the other services to assure a smooth and unduplicated flow within the research category. A small staff at the European Office, ARDC in Brussels, Belgium, monitors scientific developments in Europe.

In short, nothing is too small for ARDC. Every item, from a small pill an airman may swallow to keep himself warm after an Arctic Ocean ditching to a minute transistor comes under ARDC scrutiny. Conversely, the bulk of a guided missile and the fuselage of a giant bomber are not ignored. Any person or item which can be construed as a link in the weapon system is ARDC business.

Maj. Gen. J. W. Sessums, Jr., Vice Commander of ARDC, recently spoke at an Advanced Propulsion Sym-

Weird antennae at the Technical Laboratory of the Air Force Missile Test Center track the birds downrange from Patrick AFB, Fla.

Jet fuel injector nozzles affixed to a KB-29 boom at Wright Air Development Center can spray ice-forming water in the flight path of aircraft undergoing all-weather testing.

Anchored to desert bedrock, a missile rocket engine performs for ARDC's Ballistic Missile Division researchers.

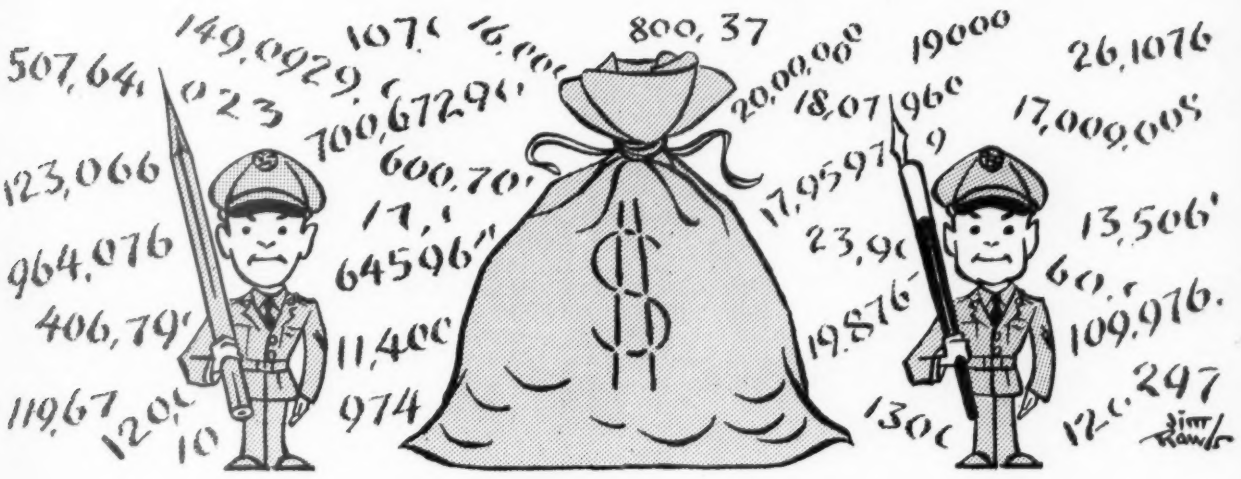
posium dinner in Los Angeles. In his speech he made reference to the Russian accomplishments in space.

"We are engaged in a scientific and technical battle. Some would say that we have already suffered a 'scientific Pearl Harbor.' I say, however, that we have not been defeated, but rather, that we have been daringly challenged."

Certainly no job in the future holds quite the importance as that of meeting that challenge. The overall mission of Air Research and Development Command dictates that it, of all the USAF commands, stand at the fulcrum in this race. SAC remains the in-being deterrent force. TAC has a global capability which makes it an operational link in the retaliation force. ADC stands constantly alert in the protection of our shores against aerial attack.

But it is ARDC which looms larger every day. Unless it continues to develop superior equipment and training methods within the limitations imposed by man's abilities, SAC, TAC, and ADC cannot perform their jobs.

America's survival in an all-out war most certainly depends on an in-being fighting arm. Without the contribution of ARDC, that force in-being could be second best—and second best will never do.



# ACCOUNTING AND FINANCE

by T/Sgt. Harold L. Craven

EFFECTIVE FEBRUARY 28, two highly important airman career ladders, Accounting and Finance, will be combined. As a result, many career airmen will have increased opportunities to broaden their contributions to the Air Force and better prepare themselves for post-retirement employment as executives in the business world.

The change could result in promotions for many airmen now performing finance duties. At present, NCO promotions are restricted in the Finance Career Ladder, but there is no "freeze" on promotions for accountants. It is anticipated that stripes will be available to pay clerks and accountants alike in the new, combined Accounting and Finance Career Ladder, which is part of the Accounting and Finance, and Auditing Career Field.

Job titles and grade spreads for Accounting and Finance personnel will be:

| | |
|---|---|
| **Accounting and Finance Helper** | **A/3C** |
| **Apprentice Accounting and Finance Specialist** | **A/2C** |
| **Accounting and Finance Specialist** | **A/1C, S/Sgt.** |
| **Accounting and Finance Supervisor** | **T/Sgt., M/Sgt.** |
| **Accounting and Finance Superintendent** | **W/O** |

At the specialist level a small percentage of the airmen in accounting and finance activities will move laterally into the auditing career ladder. This is a three-rung ladder, beginning at the specialist level (A/1C and S/Sgt.) and progressing through Auditing Technician (T/Sgt. and M/Sgt.) to Auditing Superintendent (W/O).

Airmen who seek commissioned status can set their sights on assignments in the Officer Comptroller Occupational Field. Newly commissioned officers with sufficient experience and training in finance and accounting duties may be assigned duties in Statistical Services, Machine Accounting, Auditing, Accounting, and Disbursing activities. Later in their careers they may become Budget Officers, Accountants, Management Analysis Officers, Finance Staff Officers, Staff Accountant Auditors, or Statistical Services Staff Officers.

Whatever their ranks, the overall goal of personnel in accounting and allied fields is the same—to get more mileage out of each Air Force dollar. Primarily, their function is to record, arrange, and interpret financial data to provide a factual basis on which management decisions can be made. As far back as human knowledge exists, records of some sort have been kept for this purpose. New accounting procedures and systems are constantly being developed in a quest for better management control.

Air Force finance and accounting personnel work with the most modern machine-accounting equipment available and employ every type of funding device used by the biggest industrial firms. Auditors examine Air Force accounts periodically to assure that there are no irregularities. Because of the magnitude of the Air Force, the complexity of its base system, and its interrelation with many agencies of the United States and other free world governments, new accounting methods are constantly being devised by these guardians of the Air Force dollar.

Requests for appropriations must be backed up by records which properly substantiate the need for funds.

**Airman Accounting and Finance, and Auditing Career Field**

To use money appropriated by Congress in a manner providing the most airpower per dollar, various revolving funds are administered for flexibility of purchasing. When Air Force weapons, supplies, and equipment are purchased, adequate inventory-accounting procedures are used to assure their most efficient distribution and use.

Financial-inventory-accounting procedures developed in recent years tend to limit the oversupply of spare parts and other materials. The data obtained enables supply managers to determine where to concentrate their efforts, and thus assures that the proper quantity of needed items is kept on hand, in the proper warehouses, to support Air Force activities around the world.

In past wars we were able to produce weapons and supplies far in excess of our requirements. In the event of another war our major problem could become one of distributing shortages, and our ability to do this effectively would be largely dependent upon the intelligent analysis and reporting of financial data for top management's use.

The coming merger of accounting and finance personnel into a single airman career ladder is, itself, an example of the redistribution of a critical resource for the purpose of increasing operational effectiveness. The resource, in this case, is skilled manpower.

Many of these airmen, now tied to jobs in narrowly restricted fields, can look forward to broadened career opportunities in the new Accounting and Finance Career Ladder. They will have a wider field of ultimate activity, a greater opportunity to gain experience in a variety of accounting areas, and increased job satisfaction.

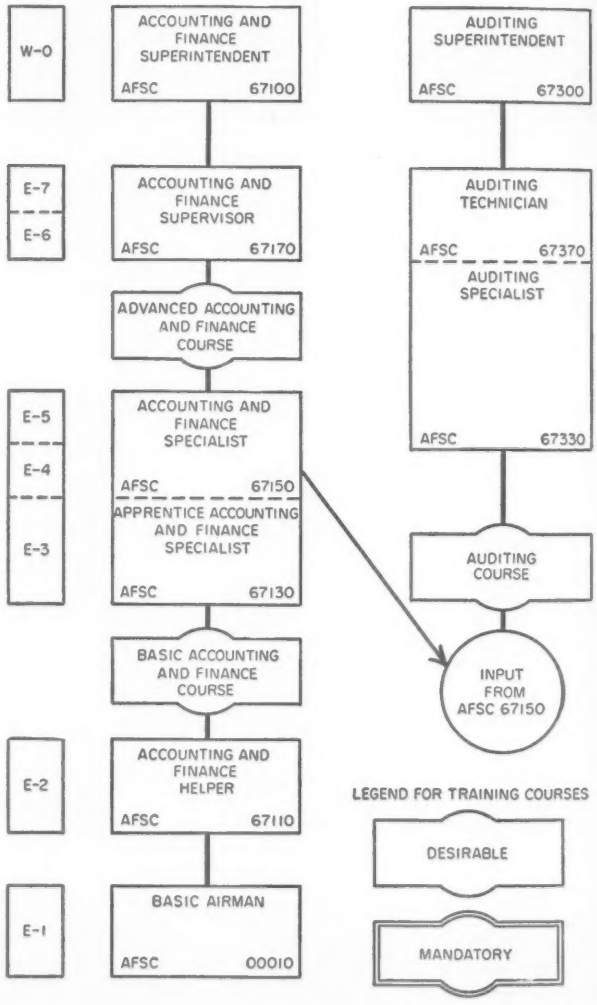



**Chart as established by AFM 35-1C.**

# TOPS IN BLUE

FROM THE MILE-HIGH COLORADO CAMPUS OF THE AIR FORCE ACADEMY, A THREE-CLASS CADET WING EXUDES MILE-HIGH CONFIDENCE.

by M/Sgt. Hal Bamford

**"WHAT'S YOUR ALTITUDE, MISTER?"**

**"SIR, MY ALTITUDE IS 5,420 FEET AND FAR, FAR ABOVE THAT OF WEST POINT AND ANNAPOLIS, SIR."**

The scene: the Lowry AFB, Colo., campus of the United States Air Force Academy, now in its third year of operation. The cast: a sharp, young second classman (junior) and an equally sharp and even younger fourth classman (freshman) of the Air Force Cadet Wing. The plot: to mold future career officers to defend the United States as the air-atomic age unfolds. The dialogue: standard, but a true indication of the way members of the wing are approaching their training.

In July the third class entered training at the temporary Denver campus, swelling the student body to more than 1,000 for the first time. Next fall, when the Academy transfers operations to its permament site approximately 70 miles south, near Colorado Springs, the wing will boast four classes for the first time. Even then it will not be a complete wing for all early classes have been somewhat reduced from the original plans which called for 750 men in each.

But the smaller-than-authorized number of personnel has certainly not dampened the spirits of the men presently undergoing training. The curriculum is rugged; the spirit magnificent.

The four-year course of study was seven years in development. Members of the Air Force Academy Planning Group consulted with more than 60 leading civilian educators throughout the country and faculty representatives from both West Point and Annapolis before finalizing the academic program.

The resultant program is as modern as the new Academy buildings, and as solid as the ageless Cathedral Rock which dominates the permanent campus site high in the foothills of the rugged Rocky Mountains.

Classroom studies are divided almost equally between scientific and social fields. Mathematics, chemistry, and physics dominate the initial two years of scientific study; and electrical engineering, aerodynamics, and thermodynamics the final two. Concentration in the social sciences and humanities areas is on English, psychology, world history, logic, and geography as freshmen and sophomores, and United States government and history, economics, foreign governments and international relations, law, and military history in advanced classes.

**Ageless Cathedral Rock dominates the permanent site at Colorado Springs.**

Additional courses also include charts and maps, statics, dynamics, mechanics of materials, design appreciation, comparative economic systems, economics of national security, and a foreign language.

An indication of the "new" approach is graphically illustrated by the fact that nearly as many hours are devoted to flying training as to military training in the airmanship segment of the four-year course. At graduation each man will be commissioned a second lieutenant, qualified and rated in aerial navigation and bombing, and awarded a Bachelor of Science degree. Only a very small percentage are expected not to be qualified to go on to Air Force flying schools and attain their pilot's wings. This small percentage will be represented by cadets who develop minor physical defects during the course of their stay at the Academy.

In spite of the forward look of the curriculum, a certain amount of lower class discipline and indoctrination is necessary in the military phase of the training. All fourth classmen are required to move "on the double," and they remain in a constant state of attention. This is not hazing in the classic sense; rather it is designed to make military bearing as natural as walking and punctuality a virtue. To improve his memory, the lower classman is required to learn and recite a goodly number of familiar quotations.

To familiarize the newcomer with Air Force phrases which will become a daily part of his life, even the cadet jargon has a definite USAF flavor. In the dining room, the table is a ramp; the ranking man at the table, ramp commander. All incoming food is handled by a navigator, and he has the added responsibility of assuring that serving dishes are filled at all times. When a dish is emptied, he must "send it on cross-country" to be replenished. Should someone ask for, say coffee, while the pitcher is being refilled, the navigator announces, "The coffee has flamed out."

During the first two years of its operation, in the absence of cadet upperclassmen, Air Training Officers fulfilled that important role. Junior officers of the Regular establishment, these young professionals were not much older than their junior charges. Many were West Point and Annapolis graduates and the role they played as big brothers, advisors, and confidants was most vital in the formative military years of the students.

The life the ATO led was not an easy one. Invariably his day was several hours longer than that of the

cadet, and he had also to maintain his combat-flying readiness as all were rated officers.

They lived within the cadet barracks in a capacity that might be likened to that of barracks chiefs. The stories which have been built-up around their early activities in this capacity are myriad. One revolves around the misadventures of nocturnal prowling.

Interroom visiting for cadets is limited to specified hours. One evening, during one of the restricted periods, an adventuresome undergraduate, in direct violation of these restrictions, chose to seek the company of a fellow cadet housed in a room somewhat removed from his own. Cautiously he tiptoed down the hall. The ever-alert ATO noted the suspicious footfalls and went to investigate. A surreptitiously closing door provided the second clue. Realizing he was about to be discovered, the cadet hastily slipped into a closet and closed the sliding door just as the ATO entered.

Attack upon an engineering drawing problem engrosses Cadet R. A. Mason.

Hiding places in cadet quarters are comparatively few, and the young officer was not long in selecting the closet for inspection. Silently he slid the door back to expose his quarry. A long, tense moment followed before the guilty cadet recovered his aplomb, and beaming at the ATO inquired, "Going down, sir?"

One of the avowed purposes of the Academy is to produce a final product that is more than a military machine. The graduate officer is expected to think quickly and arrive at a solution to a knotty problem with alacrity. A second anecdote indicates the success of this phase of the training.

On a navigational training mission, one of the cadets continually called upon the pilot for minute corrections in course. Finally, after another request for a one-degree change, the pilot, in exasperation, cautioned the cadet against such repeated minor heading changes.

Shortly thereafter the erring cadet again called the pilot and requested a correction of 15 degrees to the right. The change was promptly executed. As the plane leveled off on the new course, the same cadet's voice came through the pilot's headset. "Fine, sir. Now correct 14 degrees to the left."

Webster defines tradition as an inherent culture or attitude handed down from the past. For the men in the United States Air Force Academy there is no past. Academically, athletically, and in ways such as those described above, they are building their own tradition —one of foresight and action.

The future alone can be called the custom of the Air Force. Men like Frank Lahm, Billy Mitchell, Hap Arnold, Hoyt Vandenberg, and Hubert Harmon all recognized that fact. The United States Air Force Academy is the culmination of their dreams; the Cadet Wing the personification of our future.

Navigational flights comprise a major portion of cadet aerial training.

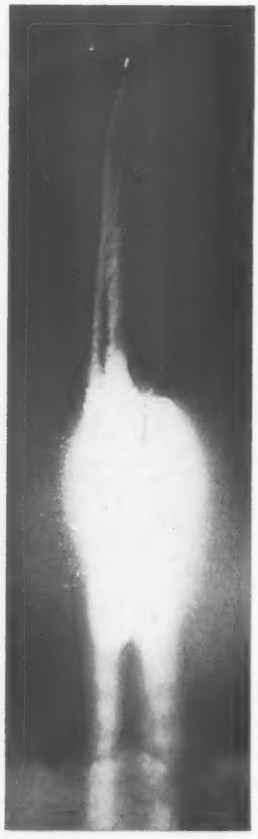
In spite of temporary quarters, there is no compromise with top quality.

# An Old Job a

To the United States Air Force the New Year is neither the beginning nor the end of anything—simply a calendar date to be observed in its passing. At sand-swept, ice-covered and swamp-surrounded runways, the arrival of 1958 is heralded with the screech of rubber against asphalt, the crack of an afterburner, and the shuffling feet of weary airmen.

Yet in the minds of these airmen, who note and silently rejoice that their continuing watchfulness has enabled 1958 to arrive in peace, the New Year is celebrated in thousands of different ways in thousands of different places. In a snowbound chapel at an Arctic outpost; on

And for man, the heavens loom closer.



An *Atlas* seeks the sky.

At dawn, a word . . . and a base comes to life.

At night, a watch eagles

# ad a New Year

transplanted isles of America, in the midst of foreign lands; in the sleek fuselages of vapor-trailing jets; in wilderness girt blockhouse structures pulsing with the electrical hum of rotating antennae; in a quiet laboratory where scientific research plumbs universal and eternal mysteries—in these places and many more the USAF greets the New Year.

There is a new goal for the vigilant—a New Year of peace to keep. So the old job goes on without pause. Ahead are new problems and new vistas that were just glimpsed in 1957. And with abiding dedication the Air Force moves ahead for peace.

Man and dog guard at gloaming.

watch eagles at rest.

In the laboratories, a search for knowledge.

In the Arctic, a search for intruders.

# The Man On The "

by Dave Karten

"Ricky 50, this is Willie 10 boom operator. Come in Ricky 50." "Ricky 50, over."

"Roger Willie 10, Ricky 50 here."

"Ricky 50 from Willie 10, forward 50 . . . forward 40 . . . forward 30 . . . up 10 . . . now up 5 . . . your elevation is good . . . now, hold it!"

As graceful as diving hawks, two giant sweptwing jet aircraft—seven miles high, above clouds and unseen below—are putting on an act more daring than ever thrilled a circus audience. The 650 m.p.h. long-range B-52 Boeing *Stratofortress* is being refueled by the Strategic Air Command's new jet tanker—the better than 600-mile-an-hour Boeing-built KC-135 *Stratotanker.*

Thousands of gallons of JP-4 jet fuel are transferred in about 20 minutes—two hundred miles are covered in that time and the intercontinental bomber gets a second wind.

The AC gives the word. "Boom operator, this is the pilot. You are clear to lower the boom and establish radio contact with the receiver." The aerial gas station is in business.

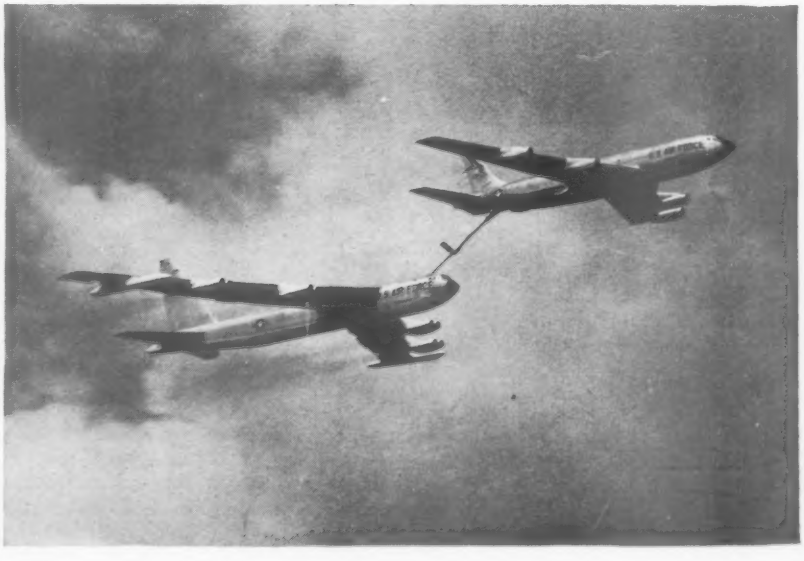
Soon the two sweptwing jet giants are hovering in the sky only 30 feet apart. Now's the trick—to slip that boom straight into the B-52 receptacle; to hit him accurately.

Careful . . . contact . . . the fuel begins to flow almost immediately. Forty-three minutes after the tanker's takeoff the thirsty B-52 has received his big drink.

"Ricky 50, you now have your briefed offload of 40,000 pounds of fuel, over."

"Willie 10, this is Ricky 50. Roger, we will drop back while you break away."

**Jet-to-jet refueling seven miles up. KC-135 has capacity and performance capability to make fast, efficient refuelings at speeds and altitudes of receiver aircraft.**



## STRATOTANKER

Aerial refueling of jet bombers with compatible KC-135 jet tankers will vastly increase the already great range, flexibility, and capability of the USAF.

When six B-52 jet bombers streaked 10,600 miles on a nonstop roundtrip flight from the U. S. to Buenos Aires recently, it marked the first time a jet-powered Boeing KC-135 was used to refuel its B-52 working partner on a long-distance flight. In an interview after they landed, Brig. Gen. William K. Martin, the flight leader, said: "We could have kept right on going."

An illustration of the KC-135's importance in terms of U. S. striking power was offered to a congressional committee by Gen. Curtis E. LeMay, Vice Chief of Staff, USAF, when he said: "A jet tanker has the same general performance characteristics as the bomber; therefore it can accompany the bomber, eliminating rendezvous problems. In addition, the performance of the jet tankers is such that the refueling altitude is at a height above most of the weather . . . and adds to the range because the bomber does not have to descend to piston-engine altitudes to receive its fuel."

Specifically, it can offload three times as much fuel, much higher, at much faster speeds, and much further from the takeoff base. It offers an almost 100 percent guarantee of clear refueling weather. And it does this with a simplicity and reliability of jet operation as compared with the operation of conventional aircraft. Jet-to-jet refueling with the Stratotanker makes SAC's deterrent force capable of striking with greater speed and efficiency for the bombers no longer need to divert from their course, speed, or altitude to make refueling contacts; and in these days of high-speed striking power, even minutes can make the difference between an effective and ineffective retaliatory force.

At present, three air refueling units—the 93d Air Refueling Squadron at Castle AFB, Calif., the 42d Air Refueling Squadron at Loring AFB, Maine, and the 4050th Air Refueling Wing at Westover AFB, Mass.—are already equipped with the better than 600-mile-an-hour four-engine jet refuelers. As additional KC-135s come off the assembly line within the next few months, they will replace some of the Air Force's piston engine KC-97s.

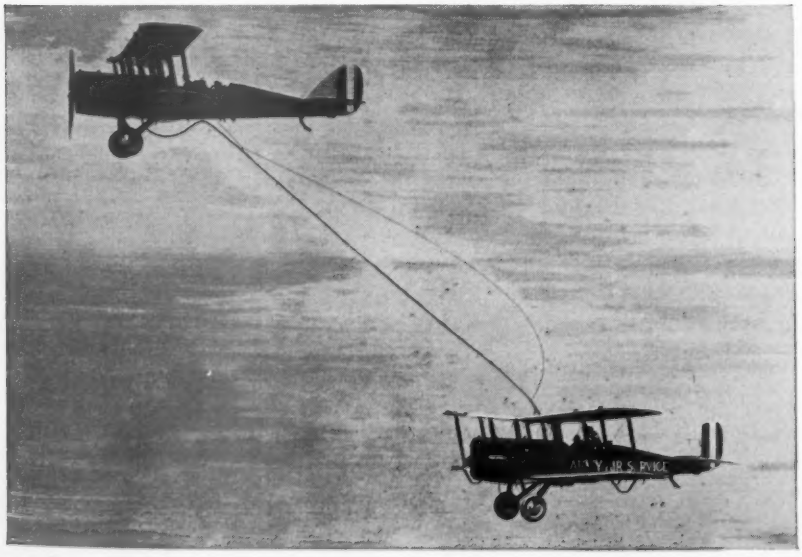
With a jet refueling force capability, Strategic Air Command's timetables for instant retaliation at the far ends of the earth will undergo sweeping revision. The time needed to reach global targets will be decreased. Here then is the story of the key men who perform the delicate task of refueling. They are the boom operators—the men on the "flying trapeze."

# "Flying Trapeze"

The silver trace of the KC-135's vapor trail arcing across the B-52's nose is a pretty sight to Maj. Lloyd F. Meyer, commander of the receiver aircraft. "Refueling with the KC-135 is more like it," he says. "No more playing hide and seek with the tanker in and out of the clouds in low weather. No more plunging down through the cumulus hoping the old KC-97 is there. No more watching the fuel totalizer creeping back towards the 'low-fuel' mark as the long climb back towards altitude begins. This new bird is a fine complement to the B-52. With more than triple the KC-97's payload, she transfers more fuel faster with less sweat. She's a 'go-er' and she looks good to me."

The man at the other end of the 15-yard-long boom that separates the 200-ton bomber from the *Stratotanker* is "Clancy," the name given all boom operators after the legendary Clancy who lowered the boom. On this mission, "Clancy" is T/Sgt. Charles L. Schlussler of Loring AFB's 42d Air Refueling Squadron. Charlie is a key man in this tricky hair-raising operation. With the precision of a man on a "flying trapeze" he operates the feather-sensitive controls while stretched out on his stomach on the soft leather-padded "ironing board pallet." His chin lies on sponge-rubber rests as he looks out the four-foot square window and he needs a clear voice and perfect depth perception as he skillfully directs the delicate task of jockeying the receiver into position for hookup. He must be able to tell precisely how far away the receiver aircraft is, because he is handling a steel boom that shoots out like a pile driver. Pumping thousands upon thousands of gallons of highly volatile jet fuel from jet to jet is a job that requires the utmost flying skill and coordination. As one air refueler put it, "When you've got more than 600,000 pounds of airplanes 30 feet apart, moving at nearly 600 miles an hour—brother, you've got to have teamwork."

**Using a makeshift hose and funnel rig, Capt. Lowell H. Smith and Lt. John P. Richter accomplished first successful air refueling over San Diego in 1923.**



There's nothing SOP about watching a 400,000-pound B-52 shimmy and shudder only 30 feet away while your 250,000-pound KC-135 dangles a 20-45-foot telescoping boom in a 30-degree arc, with the boom working closer and closer to the receptacle above and behind the cockpit of the receiver aircraft. Sergeant Schlussler has his hands full. His right one grips the control stick to the right of his pallet. When he moves it up the boom rises until it's flying straight out behind him. If he pushes down, the boom goes down. It moves right or left in response to his signals.

Three dial faces on a panel show him exactly where the receiver plane is within the 15-degree limits on either side of dead center; how far out the boom telescopes; and the elevation of the boom. Besides actually "flying" the boom into the receiver plane, he must keep an eagle eye on the panel. To prevent disastrous collision he must knew precisely where the receiver is within the refueling envelope. If the bomber gets too close or too far away, or if any emergency develops, he must know just what the emergency is and be prepared to instantly hit the automatic disconnect switch. There are certain automatic safeguards too. Should either plane get out of normal formation during actual transfer, a spring-loaded poppet inside the nozzle closes off the fuel supply and the boom automatically disconnects and retracts. The boom is activated by a hydraulic motor and can also be extended and retracted manually if necessary. Contact may be broken by either boom operator or receiver pilot at any time during the refueling. But with Sergeant Schlussler in the stirrups and skillful handling of the steady-flying jet tanker by the crew, things go smoothly.

On the panel below the front edge of his pallet the green (receiver-in-receptacle) light now changes to amber signaling successful completion of the refueling operation; another one of the 2,880-a-week averaged by SAC aircrews in their con-

stant training and readiness flights—one aerial refueling every 3½ minutes around the clock in good and bad weather.

With one series of refueling contacts completed, Sergeant Schlussler relaxes in the forward section of the aircraft and eats his flight lunch—bite-size steaks heated electrically in the KC-135, garnishes, fruit, and dessert.

A man is under a terrific strain behind the boom, Schlussler will tell you, between bites. "You don't have time to think of being tired, cold, or hungry, and when you're through you're usually too hungry to think of anything else. Food will take care of just about any minor discomfort, and, well, you just can't beat one of these flight lunches."

The KC-135 is a multipurpose aircraft. Besides providing aerial refueling for bombers and fighters at jet speeds and altitudes, it can accommodate 80 passengers, 40 tons of cargo, or a combination of both. The recent record flight from the U. S. to Buenos Aires and return featured the KC-135 in this utility global transport role.

The upper deck is flanked by two rows of bright red troop seats extending from just behind the pilot-navigator compartment aft to the business end of the tanker.

Sergeant Schlussler has been a boom operator for over four years now. He likes what he's doing, and knows the "scoop" around refuelers in the Air Force. "I joined up in 1949, after living in St. Paul, Minn., most of my life," he says. "My first flying assignment was as a gunner on a B-29. Four years later, in May 1953, I started lowering booms at Tucson, Arizona. I've been doing it ever since, in KB-29s, KC-97s and now KC-135s."

According to "Clancy" Schlussler, his big day came in June 1957 when he was selected to go through the KC-135 Combat Crew Training course at Castle AFB. On one of the first crews from Loring AFB to receive the training, he finished last September. The 42d Air Refueling Squadron received its first two KC-135s in October, and almost immediately Schlussler's crew began training.

**Sergeant Segeberg, in position to lower boom, lies stretched out on the "ironing board." With precision skill he operates feather-sensitive controls.**

Today's mission was typical of the intensive combat training missions all refueling squadrons are performing as they get the new *Stratotankers.*

This mission really was conceived by SAC headquarters days before it began. Sergeant Schlussler can give you a play-by-play account.

"Pre-planning for this mission started at 0800 hours yesterday. Mission planning began immediately. The entire flight was worked out in every minute detail from takeoff to final landing. This was probably the most important part of the mission because it required the coordinated effort of all crew members. Emergency procedures were reviewed and each crew member learned exactly what would take place at what time. While our navigator, Lt. Lorne E. Carter—who accompanied General LeMay on the recent record flights to Buenos Aires and return—charted our course, I ascertained our actual weight and center of gravity. The fuel load and figured gross takeoff pilots, Capt. Billie Card and Capt. Archibald Robertson need this information to compute takeoff and landing data, and fuel consumption for the entire flight. We learned that takeoff time was to be at 1100 the next day.

"At 1300 our crew attended a formal briefing in the Air Refueling Squadron briefing room. This briefing was conducted by the operations officer, Maj. Henry V. Markow, and his staff.

"It covered every phase of the mission and cleared up a few questions we had. Emergency procedures were again reviewed to insure that we'd be ready for any eventuality. With that completed, we were finished for the day. Early the next morning we would be on our way for another big flight and another wisecracking B-52 AC who says 'Fill 'er up with JP-4 and never mind the windshield.'

### Dawn and Today's Mission

"It's a chilly Tuesday morning. It always is at 0730 in the morning at Loring. We assemble at the personal-equipment section to draw parachutes, survival kits, and other equipment necessary for the flight.

"At 0800 we were at the airplane

Ruddervators, two small black steel "wings" at the end of boom, act as rudders and elevators in guiding it into receptacle atop receiver fuselage.

KC-135 crew—Capt. Billie Card, AC; Capt. Archibald Robertson, copilot; Lt. Lorne Carter, navigator; and T/Sgt. Charles Schlussler, boom operator—at crew inspection.

ready for inspection. The aircraft commander examined each crew member to see that we all had the required equipment. He checked the aircraft status and again reviewed emergency procedures. When the commander completed his inspection and briefing, each of us performed his own preflight. I checked the big high-speed boom and air refueling systems to see that they were operational and had no fuel leaks.

"Basically, the KC-135 air refueling boom is the same as on the prop-driven KC-97, except that the outside of the boom has been streamlined for high-speed operations. However, the similarity of the two booms in no way relieves me of the tremendous preflight responsibilities on refueling missions. If I missed just one minor item or overlooked something during preflight, the whole mission could be aborted after takeoff, or both the KC-135 and the B-52 could be damaged. The result could be loss of several million dollars worth of valuable equipment and possibly the lives of highly trained crew members.

"At 1025 preflight was completed and the clearances filed. The aircrew was in position and engines were started. The pilot received taxi clearance from the tower and we began to move slowly out to takeoff position. The sleek new *Stratotanker* began to roll down the runway, slowly at first, but quickly gathering momentum.

"Now all the planning of the previous day begins to unfold. Eight thousand-foot marker, acceleration speed checks; 6,000-foot marker; go-no-go, speed checks. Seven thousand feet of runway is used before the huge jet tanker lifts her nose and swiftly begins to climb. Everything checks perfectly and this is the time every pilot silently thanks God for the best maintenance men in the world."

Schlussler finishes his lunch and explains that the B-52 he just refueled has been in the air for many hours and still has many hours of flying on their training and readiness flights, in which they simulate the actual missions they would fly if war broke out.

Perhaps the *Stratofort,* with its new worldwide range, which just quenched its thirst at the end of Schlussler's boom was enroute to the North Pole, the Azores, Europe, or Asia.

"My work isn't over yet," Schlussler said. "Not by a long shot. During training I was given a course in celestial navigation. It's now my job to do all the sextant work while the navigator plots the celestial fixes.

"In a global operation like SAC's, we never know where a rendezvous point will be. With sweptwing jets flying better than 600 miles per hour, hooking up is a delicate proposition—split second timing is essential. Neither of us can afford to be late. When a B-47 or a B-52 needs fuel, it needs it right now.

"So you can see how important navigation is."

In eight hours the tired *Stratotanker* crew would touch down. Despite their fatigue, the crewmen will have a good feeling—the satisfaction of a well-planned and executed mission. Perhaps tomorrow another mission will start and the men on the "flying trapeze" will go through their critical operation night or day, in fair weather and foul, performing their endless job of keeping the free world free.

# AIRMAN'S WORLD

## FALCON HONORS

The USAFA Falcons finished their 1957 football season with three wins, six losses, and a tie as they made their bow into major college grid schedules.

Although no one was named to an All-American squad, the team was not without individual honors. Cadet Daniel Johnson, a sophomore guard from Moorhead, Minn., was named to UCLA's all-opponent 11. A shoulder separation kept Johnson on the bench after midseason. Buck Shaw was named coach of the same all-opponent team.

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## FIRST BIRTHDAY

During the first year of the Medicare Program, which ended on December 6, 1957, more than $43 million was expended.

USAF led the other services with 41 percent participation in the program designed to provide improved and uniform medical care for members of the Armed Forces and their dependents. (See THE AIRMAN, August 1957 issue.)

Department of Defense figures indicate that more than $22 million was expended on physicians' bills, while hospital charges accounted for the other $21 million.

To date, almost 40 percent of Medicare has been for maternity patients, department officials stated.

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## USAF DUNCAN PHYFE

Thanks to the efforts of a do-it-yourself sergeant, pilots at Tachikawa AB, Japan, have had their flight-planning chores made easy.

Since the USAF has no standard flight-planning table in its inventory, M/Sgt. Marion C. Houze, 1503d Air Transport Wing, decided to design such an article to ease the task of flight personnel. The resultant piece of furniture is attractive, as well as time-saving, and can be used by as many as 12 people simultaneously.

The table contains places for all needed blank forms, facility charts, supplementary flight information, and letdown charts. Plexiglas on the working surface provides a cover for additional charts showing airways and other flight-planning aids. Adequate space is also available for computers, a master watch, and an alphabetical file for partially completed clearances.

## RETRAINING PROGRESS

Sixty-one AFSCs are identified as "eligible skills" in a new retraining message (AFPMP 112020) dispatched recently from Hq USAF. Only ZI-based airmen are covered in this latest revision, however. A similar message, covering overseas personnel, will be filed in the near future.

In addition to the complete listing of eligible AFSCs from which surplus field personnel may seek retraining, the message also contains identification of 15 courses for which airmen may make application.

It outlines ground rules, application instructions, and administrative procedures. Personnel contemplating application for retraining would do well to discuss the contents of this message with their personnel officer prior to initiating paperwork. In this manner they may eliminate errors and delays.

Three new additions (radio traffic analysis, language, and munitions disposal) have been added to the course availability list. Application procedure for these courses was outlined in another recent message (AFPMP 111668).

In addition to the specific messages outlined above, AFM 35-11, Military Personnel Assignment Manual, spells out provisions for general assignment and reassignment actions. Personnel sections should be consulted for specific information contained in all referenced messages and manuals.

The following is a listing of the eligible skills:

| | | | | |
|---|---|---|---|---|
| 23170 | 42171 | 55170 | 60370 | 71370 |
| 23270 | 42351 | 55270 | 62150 | 73270 |
| 23373 | 46250 | 56170 | 62170 | 73470 |
| 29333 | 46270 | 57170 | 62250 | 74170 |
| 29373 | 47151 | 58150 | 62270 | 75170 |
| 32350A | 47170 | 58170 | 62370 | 77150 |
| 32351B | 53150 | 59150 | 64171 | 77170 |
| 32371B | 53170 | 59170 | 64172 | 77131 |
| 36172 | 53270 | 59151 | 70270 | 77171 |
| 40170 | 53370 | 59171 | 71170 | 90150 |
| 40250 | 53470 | 60270 | 71270 | 90274 |
| 40270 | 55151 | 60350 | 71350 | 90671 |
| | | | | 90970 |

Available courses are as follows:

| | | |
|---|---|---|
| AB 20230 | AB 30332F | AB 32330G |
| AB 20330 | AB 30430A | AB 43131D |
| AB 29130 | AB 30430C | AB 43131E |
| AB 30330 | AB 30431C | AB 43230 |
| AB 30332C | AB 30432A | AL 46131 |

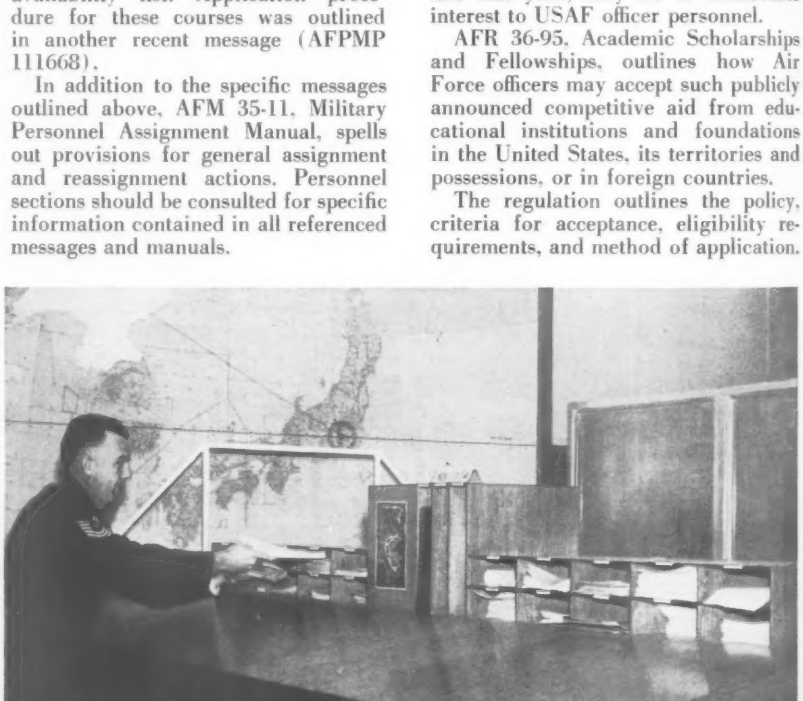
★ ★ ★

## REG REVISION

A new regulation revision, published late last year, may be of immediate interest to USAF officer personnel.

AFR 36-95, Academic Scholarships and Fellowships, outlines how Air Force officers may accept such publicly announced competitive aid from educational institutions and foundations in the United States, its territories and possessions, or in foreign countries.

The regulation outlines the policy, criteria for acceptance, eligibility requirements, and method of application.



## VOICE IN THE DARKNESS

Because of an unusual hobby pursued by T/Sgt. Jerome B. Kmiecik of Westover AFB, Mass., dozens of men and women shut away in the prison of blindness now experience the excitement which accompanies the takeoff of an eight-jet Boeing B-52 *Stratofortress*. By means of tape recordings, Sergeant Kmiecik collects the multitude of sounds surrounding life at this busy Strategic Air Command base, and sends them to blind friends scattered all across the country.

The technique is called "voicesponding," and Sergeant Kmiecik first learned of it about two years ago while he was thumbing through a magazine devoted to the tape recording hobby. His first correspondent through the tape medium was a blind salesman in Indiana. His next, a sightless couple at Waltham, Mass. Today his circle of sightless friends numbers more than 40 in the immediate area of the base, and includes many others who exchange "voice letters" from as far west as Utah.

The purr of machinery or the whine of a jet engine adds realistic color to the sergeant's word pictures of Air Force life, and airmen throughout the base have become accustomed to seeing him with portable recorder and microphone in hand. At the maintenance shop or on the flight line, in the base gymnasium or the coffee bar, the medley of sound—harsh or subdued—is preserved on tape so that others may "see" the robust vigor of the jet age.

Subject matter recorded by Sergeant Kmiecik is not rigidly restricted to military affairs, and he endeavors also to reflect other segments of life denied to the sightless. Three or four evenings a week are devoted to editing tape, or to recording news items and magazine articles of particular interest to his friends. For the benefit of a blind union worker in the area, one of his recordings carried the entire text of a union-management contract.

In the course of a base tour conducted for the blind, or in correspondence with far-off members of the group, Sergeant Kmiecik sometimes finds his ingenuity taxed by such questions as, "What does the B-52 look like?" and "Why does it make so much noise?" But the work goes on, and a short time ago the Springfield (Mass.) Association of the Blind invited the sergeant to membership in the "Helping Hands" group of the association.

By profession, Sergeant Kmiecik is an instructor in the complexities of the B-52 fuel system, and he credits his work with the blind with improving his work in the classroom. "I have developed a new way of painting a word picture of the things I am discussing," he says, "and this technique has helped me very decidedly."

A number of other airmen at Westover have evidenced interest in Sergeant Kmiecik's program by helping prepare recordings in the evenings. Their efforts are based on the knowledge that nothing can pierce the eternal night, but a friendly voice may make the darkness a little less lonely.

**Sergeant Kmiecik explains size of B-52 to visiting group of blind by walking them the length of wingspan, fuselage, etc.**

**. . . All I said was "Are you driving the 5:15 bus out of here for Atlanta?"**

## SUPERSONIC SERGEANT→

M/Sgt. Clifford H. Garringer of the Air Force Flight Test Center at Edwards AFB, Calif., has earned the distinction of being the first enlisted airman to log flying time in the new Convair B-58 *Hustler*. As a flight engineer on eight flights he has acquired 23 hours' total time. Garringer's 19 years' service includes a wealth of experience with military aircraft and has provided him with a vast store of the technical know-how needed to meet the specialized demands of the complex new weapon.

In flight, the sergeant engineer occupies the middle position of the three-place bomber. He rivets his attention to a 4′ x 4′ flight-test panel containing a multitude of instruments. His only contact with the outside world is through a small window, but there is little time for sightseeing.

Prior to his assignment to Convair's Fort Worth school for training in the B-58, Garringer spent more than three years at Edwards as crew and flight chief on the B-57, the B-45, and the experimental B-51.

Sergeant Garringer is attached to the 6517th Flight Line Maintenance Squadron (Bomber) and lives on the base with his wife and their four children.

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## EMERGENCY LEAVE TO ZI

AFR 35-65, dated 3 December 1957, prescribed the circumstances and procedures under which personnel serving overseas may be granted emergency leave to visit the United States. The new regulation specifically outlines the circumstances warranting automatic approval of leave requests by commanders, and stipulates alternate action for borderline situations.

Except for certain designated areas, circumstances must in all cases be verified by the American Red Cross, and approval authority is delegated to base commanders at a number of isolated installations.

Requests for emergency leave may be initiated by personnel through the appropriate local commander or by relatives or friends in the ZI through the local or nearest chapter of the American Red Cross. Emergency leave is normally granted for a period of 30 days, but if the presence of the individual is required in the United States for a longer period, application for extension may be submitted. Extensions in excess of 30 additional days will normally not be granted.

The new regulation supersedes AFR 35-65, 27 July 1955, including change 35-65A, 4 August 1955.

## AW, GO AHEAD

Recent reports that lipstick and oxygen don't mix are false according to officials in the Aviation Medical Division, Surgeon General's office.

Rumors have it that the combination can produce a conflagration. The USAF Aero Medical Lab has completed tests on lip preparations and reports no hazard appears to exist for flying personnel.

In addition, Col. John P. Stapp, Chief, Aero Medical Field Lab, Holloman AFB, N. M., who was recently married, commented on the rumor. Colonel Stapp said that while there unquestionably is an incendiary hazard in lipsticks he has concluded this is no problem to aircrew personnel *while they are flying*.

In short: Go ahead, girls, kiss the boys goodbye.

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## FLIGHT SAFETY RESEARCH

More than 180 military and civilian flying safety experts from 22 states and Canada attended the 31st Air Force-Aircraft Industry Conference at Palm Springs, Calif., recently.

Maj. Gen. Joseph D. Caldara, USAF's Director of Flight Safety Research, told conferees that although the Air Force accident rate is at an alltime low of 14 accidents per 100,000 flying hours, much remains to be done in the accident-prevention field.

For example, a recently concluded two-year study showed that failure and malfunction of brakes, drag chutes, wheels, and tires were the primary cause factors in more than 150 mishaps involving USAF aircraft. Such failures were a contributing cause in 135 additional accidents.

General Caldara pointed out that fast landing speeds of new aircraft place tremendous stresses on component parts of the braking systems. Therefore, he called upon industry to concentrate on improving methods of stopping supersonic aircraft and thus aid in the reduction of such accidents in the future.

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## TRAINING GROUND

Convair, builder of the supersonic B-58 *Hustler*, is conducting a ground-training familiarization course for USAF personnel at its Fort Worth, Tex., plant.

Approximately 220 pilots, observers, and ground force technicians are expected to complete the course before it closes in July. Graduates will be utilized in the Air Force-conducted phase of flight-testing.

The course was designed by Convair's service engineering department and covers the basic B-58 aircraft and its systems, including observer ground checkout.

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## MITCHELL IN BRONZE

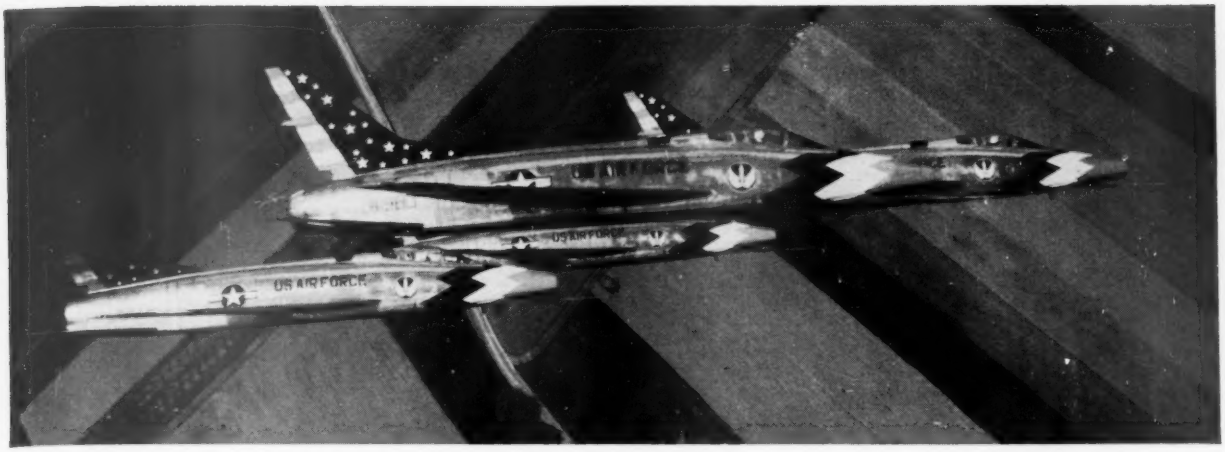
Wright Day ceremonies in Washington last month included dedication of a bronze statue of Brig. Gen. Billy Mitchell in Aeronautical Hall, Smithsonian Institution.

The Dec. 17 afternoon ceremonies featured Gen. Carl Spaatz (USAF, retired) as principal speaker. The statue was unveiled by Billy Mitchell, Jr., son of the famed officer. Many high USAF officials, including Chief of Staff, General Thomas D. White, attended. First to accept the institution's invitation was Gen. Thomas deWitt Milling, (USAF, retired) Mitchell's World War I aide.

The statue, slightly larger than life-size, was created by Bruce Moore of Wichita, Kan. Moore, who never met Mitchell, utilized photos, motion pictures, family interviews, and extensive reading research to create the amazing likeness.

The statue tops a granite pedestal and is flanked by six flags representing Mitchell's service career. Two cases of memorabilia housing the general's uniforms, swords, and flying equipment are also part of the overall display. His WW I aircraft has been recovered, restored, and hung from the ceiling to complete the exhibit.

Congress authorized the addition of the Mitchell tribute after a suggestion from the late George H. Stephenson of Philadelphia, an ardent admirer of the onetime controversial figure. Funds for the statue were provided from the Stephenson estate.




*ALL PARTS MESH LIKE A FINE SWISS WATCH IN THE SAGA OF*

# AOCP AND THE READY 36TH

THE 36th Fighter Day Wing, based at Bitburg AB, Germany as a member unit of the NATO team, calls the Rhineland home base. With the usual complement of 75 North American F-100 *Super Sabres*, the wing's people keep one eye on Russian activities around the curtain—less than an hour's flying away—and the other eye on the all-important AOCP (aircraft out of commission for parts) rate. At 1957's end, the wing's AOCP rate stood at what USAF headquarters believes to be an all time Air Force low. For 300 consecutive days, no 36th FDW *Super Sabre* had stayed on the ground for lack of parts.

As the operational readiness of any USAF combat unit is dependent upon the amount of equipment it has in commission, commanders closely watch the barometer of readiness known as the AOCP rate.

And for maintenance men Air Force-wide, a low AOCP rate is a goal toward which each turn of a wrench, each twist of a safety wire, and each minute's work is directed. Yet the goal is elusive.

To keep aircraft flying, periodic inspections are necessary and inspections usually reveal a frequent need for replacement parts. This need reacts from the mechanic who will replace the part on the out-of-commission aircraft all the way up the winding echelons to the source of manufacture and supply. A breakdown anywhere along this trail can shoot AOCP rates skyward and operational readiness downward.

As though this accomplishment of the 36th were not enough, the wing compounded the magnitude of the achievement by chalking up its record in the face of (1) overseas logistic problems which heretofore have precluded any overseas based unit from approaching such a mark; (2) operations which flung units of the wing from the 100-plus degree temperatures of Libya, North Africa, to scattered European bases where the mercury frequently nudges zero; (3) support of the *Skyblazers*, air demonstration team, which demands 100 percent in-commission rate for its regular shows throughout the continent; and (4) aircraft with thousands of parts associated with engine, airframe, and installed equipment.

How does the 36th do it? The answer has been the subject of military leadership courses throughout history: teamwork and that oft repeated but sometimes vague element known as esprit d'corps.

Lt. Gen. William E. Tunner, former USAFE commander in chief, said in a letter to the 36th's commander, Col. Walter B. Putnam, "This most outstanding accomplishment points out an obviously high degree of organizational pride and spirit of teammanship on the part of all personnel assigned to your organization."

The cited teamwork extended from the man on the line up to AMC headquarters. As a matter of fact, not only the 36th, but Air Materiel Force, European Area (AMFEA); USAFE; AMC, and the Sacramento Air Materiel Area (SMAMA) have shared in the praise for the highly coordinated effort.

At wing level, the all-out drive was personalized on 36th FDW ramps by expenditures of individual airmen's shoe leather and use of private automobiles in the constant track-down of needed parts. Thus even precious minutes waiting for transportation were saved. On one occasion, a yaw and pitch amplifier was airlifted from Wheelus AB, Libya, to Bitburg, repaired and flown back to Wheelus in time to keep the AOCP record intact.

In early 1949, the wing adopted the slogan, "The Fightin' 36th." Today, they might justifiably add, "The Ready 36th."

# The Great Transition

by T/Sgt. Harold L. Craven

**Some folks think basic trainees should attend classes in etiquette. Others recommend that more time be devoted to military drill, formal inspections, and general toughening of recruits. What is the purpose of Air Force basic training? What does this training include? Here are some of the answers.**

(PHOTOS BY A/2C IRV GROSSMAN AND A/2C RICHARD F. HAMILTON)

In the beginning they represent many places and many things.

AIR FORCE basic training has been called "too rugged" and "too soft" by many trainees, parents, and veteran Air Force members. It has also been called the best basic military indoctrination program in the history of the Air Force.

A woman in Texas, who read a false newspaper report which stated that basic training had been reduced from eight to four weeks, complained that airmen were being inadequately trained. She offered to donate her broom and mop to the Air Force for the purpose of cleaning up its basic-training program.

An Air Force officer in Europe protested that too little time is being devoted to drill, physical training, and general toughening of recruits. He referred to Air Force basic training as "the current basic training coddling program" and recommended that more inspections, drill periods, and calisthenics be added.

Because she believed that modern youth had thrown away its ideals, gallantry, and chivalry, a woman in New York City recommended that classes in good manners be conducted each week during basic training. The instructors, she said, should be older, attractive, sophisticated women who could cope with possible heckling while initiating airmen into the ways of polite society.

During his final week of basic training an airman recently wrote a "thank you" letter to the USAF Chief

of Staff, stating that "this training is the best and I think the instructors are of the best calibre. Before entering the Air Force I heard that they treat you in an inhuman manner, but I find that to be a false accusation. I have been taught self-discipline and valuable military knowledge. I hope to make the USAF a career if possible."

The quality and quantity of basic training given Air Force enlistees is a subject of concern to many Americans who are interested in the Nation's security. According to Lt. Col. William J. Justice, who monitors the basic-training program for Air Force Headquarters, many persons in the armed services and in civilian life have a mistaken idea of the purpose of basic training.

"Basic training is not expected to produce fully qualified military men any more than technical schools are expected to turn out fully qualified technicians. Its purpose is to effect a transition from civilian to military life. It is primary training; advanced training will continue throughout each airman's term of service," Colonel Justice explained recently.

He said the Air Force is determined to provide the best basic training possible, in order to transform several thousand teen-agers per month into airmen capable of meeting the challenges of a rapidly changing military service.

"Our instructors must take a cross section of America's youth and inject into it extreme curiosity, uncommon enthusiasm, and unswerving dedication to the accomplishment of the Air Force mission. This cannot be accomplished by merely teaching recruits how to shoot and salute and when to don a gas mask," Colonel Justice added.

To accomplish this task the Air Force has improved its instructor corps, devised more efficient classification and assignment procedures for trainees, expanded its basic-training program, and figured out a way to get its enlistees into productive jobs sooner.

All Air Force basic training begins at Lackland AFB, San Antonio, Texas. Male recruits get 11 weeks' instruction, WAF enlistees eight weeks. WAF basic training is less rugged, physically, than that given male airmen, but similar in other respects.

Two out of three enlistees are selected for technical-school training. In order to get technically trained men on the job seven weeks earlier, enlistees selected for technical training complete the final seven weeks of their basic training at technical school installations, in addition to their job-specialty training. In the past year this system has netted the Air Force a productive manpower gain of about 10,000 man-years, time enough for 500 men to earn 20-year retirement.

One third of the enlistees complete all their basic training at Lackland. This group includes male airmen who will be given on-the-job training at their next bases in specialties for which technical schools are not available, and all WAF enlistees.

To assure that military training given at technical-school bases will be as thorough as that provided at Lackland, special basic-training units have been established and staffed with men whose sole duty is teaching military subjects. A special instructor's school at Lackland has graduated some 1,900 sergeants selected from every major air command. Instructors who are experienced in leadership and capable of answering questions about aviation and airpower, Air Training Command officials believe, make basic training more interesting, therefore more effective.

Enlistees arrive at Lackland by bus, train, and plane from points throughout the United States and its territories. Their military life begins with a meal, organization into training flights, assignment to quarters, an advance payment of $46, a "skinhead" haircut (WAF excluded), and a welcoming address by one of Lackland's 31 chaplains.

The chaplain describes the training program, provides fatherly advice on how to get along in the new and unfamiliar environment, points out the recreational facilities avail-

NCOs are tough, but understanding.

The inevitable "Ready on the firing line. . . ."

**History and traditions building displays help illustrate principles of airpower and equipment.**

able to trainees, and outlines the religious program. Airmen learn that weekly chapel attendance figures range from 10,000 to 12,000; that five chapels and nine additional buildings are put into use to provide services for Protestants, Catholics, and Jews; and that voluntary religious training will be supplemented by moral-leadership instruction throughout their service careers.

Following the chaplain's address trainees undergo a thorough but rapid series of processing activities, including personal-affairs counseling, clothing issue and tailoring, medical and dental checks, inoculations, and aptitude tests. The aptitude tests now in use are far superior to those of previous years.

The wartime Army General Classification Test (AGCT), long a tool of Air Force classification personnel, has been retired from service and replaced with a new, more efficient, battery of tests.

AGCT scores indicated an individual's general aptitude but failed to point out areas of minimum and maximum training potential. The new test battery is broken down into five categories: mechanical, general, administrative, electronics, and radio operator. With five scores to work with instead of one, classification specialists can determine what types of training an airman can absorb with ease and in what technical fields he would have difficulties. Now airmen who would have failed to qualify for any type of technical training under the previous testing method are being sent to schools, sometimes on the basis of only one high score out of five. Because fewer classification errors are made at the basic-training center, technical schools have a lower washout rate than in the past.

Lackland's classification personnel are experts, qualified by training in their jobs and past experience as Air Force supervisors. They know that the efficiency of the entire Air Force depends, to a great extent, on their decisions.

When a basic trainee is interviewed he is also given a full explanation of classification and assignment procedures. He is told that needs of the Air Force will be given first consideration, that the scores he made during eight hours of aptitude testing will determine his eligibility for training in career fields in which personnel are currently needed, and that his personal desires will be given as much consideration as possible. The trainee and his interviewer, taking these factors into consideration, develop a list of possible assignments.

Twelve days later the airman returns to the classification center to learn where he is going and why. Answering the question "why" is an important part of Air Force basic training.

Sometimes Air Force needs, individual aptitudes, and personal desires are not peas of the same pod. If a trainee understands that the Air Force is operated along the lines of any successful business enterprise —that a manufacturer would not hire more lathe operators or machinists than he needs—chances are good that he will lose his desire for training in propeller maintenance and look forward to instruction in jet-engine repair or missile guidance.

"Successful completion of training in any field is largely dependent upon attitude. We try to develop proper attitudes by explaining the reasons for decisions affecting each airman's future and by showing him how he can become a highly important member of an Air Force team which is constantly developing new tactics," M/Sgt. Troy I. Corley, noncommissioned officer in charge of Lackland's career-field exhibits building explained.

This building is one of two motivation classrooms at the training center. The other is a history and traditions building. Trainees are given a lecture at each bulding and participate in a question-and-answer session at each. Both buildings remain open during off-duty hours for the benefit of airmen who wish to reexamine the exhibits or ask additional questions.

Exhibits in the history and traditions building trace the development of American military aviation from Civil War observation balloons to guided missiles. They include a restored World War I pursuit plane, early aircraft engines, a World War II bombsight, and a cutaway model of a modern jet engine.

To most trainees, however, aviation's future appears to be of much greater interest than its past, particularly their part in its future. The career-field exhibits building provides answers to many questions through its 31 airman-career-field displays and its staff of NCO instructors. Each exhibit includes a chart showing paths to NCO and warrant officer grades in the career field.

Aviation interest sparked in these buildings is followed by classroom instruction in such subjects as *The Air Force in World Affairs* and *Mission and Organization of the Air Force*. A six-hour motion picture series, *The Air Force Story*, gives the airmen a more complete understanding of the importance of airpower.

Classroom instruction in aviation subjects, however, has not replaced

field training. The drill field, bivouac area, calisthenics class, and firing range are still important parts of Air Force basic training. Trainees perform security-guard duty; participate in survival-training exercises; GI the floors of their two-story, open-bay barracks; and climb over and under obstacles on Lackland's Confidence Course.

According to M/Sgt. Gavin Campbell, a former Hancock, N. H., high school principal and athletic coach assigned to the basic-training program at Lackland, the obstacles are similar to those used for decades by all the services. Additional devices established for aviation cadet and officer preflight students are available to basic trainees on a voluntary basis. These include a parachute tower, which provides all the thrills of a carnival riding device, and a fire barrier through which trainees run to "rescue" a sandbag from a burning airplane cockpit.

"Confidence-Course training is designed to give airmen a more complete knowledge of their own capabilities," Campbell said.

"Fear of failure," he added, "is life's greatest handicap. When a trainee learns that he is capable of running through a series of seemingly impossible obstacles on the Confidence Course he begins to realize that other apparently difficult Air Force tasks may also be within his grasp. If he takes this confidence to his technical school or on-the-job training assignment, he will have few difficulties."

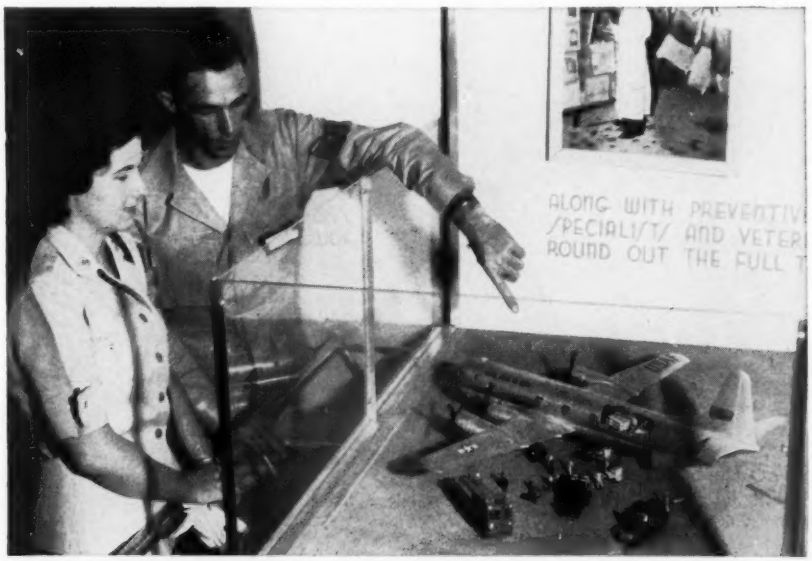
Campbell said the Confidence Course, like marksmanship training, provides an opportunity for competition among Air Force recruits, and helps to inspire them to greater achievement in all phases of the program. Competition, he believes, is as important in a military-training center as it is in a high school or university.

Instruction is also given in subjects which are admittedly less interesting to most trainees than an afternoon on the firing range or a simulated parachute jump on the Confidence Course.

Enlistees are taught military customs and courtesies, resistance to enemy interrogation, care of uniforms and equipment, and defense against chemical, biological, and radiological attack. They are required to attend classes in personal-affairs management, principles of leadership, first aid, traffic safety, and citizenship—subjects which will be of lasting value whether or not they decide to become career Air Force members.

The purpose of basic training is to effect a transition from civilian to military life. Military training, like advanced instruction in technical subjects, is a continuing responsibility of commanders in the field, and this responsibility will, as always, be delegated to junior officers and enlisted supervisors.

Each of us will be called upon to play a part in providing advanced training for these young airmen. How well we carry out our individual roles as instructors and supervisors will materially affect the future of the Air Force.




**Career field exhibits explain duties performed in Air Force job specialties.**

**Mementos from basic last a lifetime.**

# TECHNIQUES

## ALMOST PIGGY-BACK

A patent has been issued to Bernhard Hohmann for a new apparatus designed to tow disabled jet aircraft in the air. Mr. Hohmann of Fairborn, Ohio, is a former employee of the Air Force.

A 12- to 30-foot nylon tow rope, carried in a wing tip, may be released in loop form by the pilot of a crippled jet. A second jet, utilizing a hook installation from within its opposite wing tip, can catch the loop, extend the tow line to full length, and pull the disabled craft to a landing strip.

Opposite wings will be used for installation of the two separate pieces (the hook and rope anchor) of the apparatus to clear the disabled plane from the jet blast of the towing craft. Additionally, it has been found in previous experiments that such an arrangement presents the fewest difficulties.

## ← RUB AND SCRUB

A new bomb fuze testing facility has been placed in operation at the Air Force Armament Center, Eglin AFB, Fla. Designed to determine the handling safety of bomb fuzes, the facility boasts a number of innovations which were developed to check these units under the most extreme conditions.

Included is a drop tower which provides for shock-testing the fuzes. Fuzes are inserted in inert bombs, projectiles, or warheads, and dropped from 40 to 80 feet from the tower onto steel plates.

A novel "bath" has also been placed in operation. Live fuzes are immersed in a half-inch thick, clear plastic tub where they are visually checked for airtightness. Indication of a leaking fuze is ascertained when bubbles are emitted from the fuze itself.

As a further check, after its bath, the fuze is dismantled and if traces of moisture appear on any of the internal parts, it is eliminated from further use. Fluorescein dye may be added to the bath to aid in internal inspections. Discolorations from the dyes are more readily noticeable upon dismantling.

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## CYCLOPS →

Cyclops is identified as one of a mythical race of Sicilian giants who boasted a single eye in the center of the forehead. The Air Force recently initiated operations with its own version—not a myth—spelled R-O-T-I.

ROTI (Recording Optical Tracking Instrument) is a permanent-installation optical tracking unit installed at the USAF Missile Test Center, Cape Canaveral, Fla. Basically, it is employed to photograph missiles in the earlier stages of their flight.

A second unit, Telescopic Photographic Recorder (TPR), is a mobile version of the same general principle, and is located at the Air Force Armament Center, Eglin AFB, Fla. It is utilized to provide photographic data for the scientific analysis of bomb, aircraft, and missile flights.

TPR employs a 70 mm. motion picture camera in its work; ROTI shoots its photos at the rate of 60 pictures per second.

## ALMOST EVERYTHING

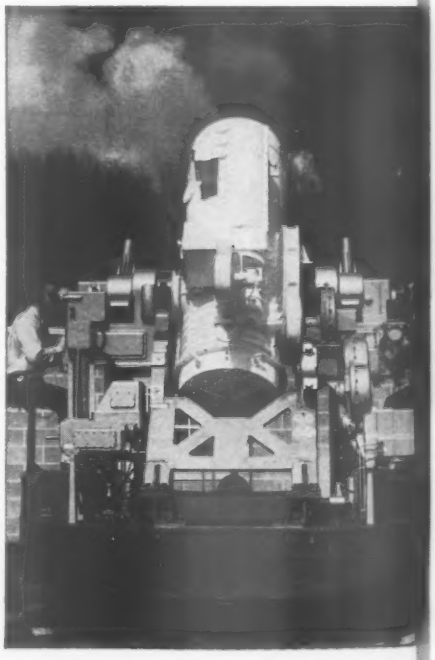
Pilots at George AFB, Calif. are operating a simulator that can duplicate almost anything short of a Yankee win over Burdette—and even the Yankees couldn't puzzle that one out.

Almost every known flight situation can be reproduced by the flick of a switch—flame-out patterns; IFR navigational problems with GCI, GCA, and CCI intercepts; air-to-air and air-to-ground gunnery; bombing; rocketry; and LABs.

The North American F-100 *Super Sabre* Simulator is one of the most valued and modern ground training devices ever constructed. Through the miracle of electronics, the pilot can obtain many hours of safe experience in solving aviation's problems. Flight commanders are utilized in the role of instructors thus serving a double purpose—the younger pilots are given the advantage of their senior's experience, and the commander can evaluate the proficiency of his flight members.

Many emergency procedures, too dangerous for actual air simulation, can be safely reproduced on the ground. The problems are flown solely by instruments in the simulator.

And the value is dramatic. A flaming crash, recorded on the electronic scope rather than as an actual ball of fire somewhere in the Mojave desert, can have an indelible effect on a pilot who otherwise could have developed into a "bold" jockey. Mistakes in the simulator can be corrected—in the real thing, one is too many.



*Aviation has spanned slightly more than half a century. Yet, within that time, the feats of the "men who fly" have become legendary. Progress in the air has been so rapid the world has hardly found time to pay fitting tribute to the pioneers who blazed the trail above the earth. This is the first in a series on monuments and shrines to the airmen who have written a historic chapter in the chronicle of world progress.*

# A TOAST TO THE HOST

**by Maj. Craig S. Powell**

ST. FRANCIS, PATRON SAINT OF THE BIRDS
HE GIVETH YOU YOUR WINGS TO FLY
AND BREATHE A PURER AIR ON HIGH
AND CARETH FOR YOU EVERYWHERE
WHO FOR YOURSELVES SO LITTLE CARE
PROTECT THE MEN WHO FLY

NESTLED in the foothills of the mighty San Bernardino Mountains near Riverside, Calif., stands the century-old Mission Inn. Adjacent to the inn is the Chapel of St. Francis of Assisi, Patron Saint of Birds and Birdmen.

Many years ago, Dewitt Hutchins, then master of the Mission Inn, friend of fliers, and avid supporter of aviation, dedicated a Fliers' Wall and changed the chapel into an international shrine for aviators.

Today the Mission Inn's chapel might almost be termed a museum. Wherever one looks there are souvenirs of famous flights; parts of propellers, wings, struts, helmets, or flying apparel—used by renowned airmen on renowned flights.

Highlighting the scene is the Famous Fliers' Wall literally covered with wings of airmen from around the world.

Neither the inn, the chapel, nor the wall are dedicated solely to the Air Force, but it is inevitable that the famed names of men who have worn the Air Force Blue should dominate such a shrine. This is a wall dedicated to all who fly. Their names are legion and are all-inclusive from Orville Wright through Charles Lindbergh, "Hap" Arnold, Amelia Earhart, Margaret McQueen, Roscoe Turner, Benjamin Foulois, Donald Douglas, and thousands of others—both of the famed and of lesser lights.

Dewitt Hutchins dedicated the chapel to the men who fly. Through his efforts, and with the help of such men as his lifelong friend, "Hap" Arnold, its legend grew. By word of mouth, as the aircraft developed and man drew the world closer together, the fame of the tiny chapel spread. Whenever possible, fliers from remote corners of the earth made a visit to the shrine part of their trip to the United States.

During these visits they paid their tribute by leaving behind some treasured possession—a pilot's wings, an aviation badge, something to identify the visitor and his common association with the sky.

Today the wall and the chapel boast wings of the famous of many countries; badges of worldwide aviation companies; symbols of many of the famed organizations of military airpower; mementos of airlines, schools, and flying clubs from the far corners of the earth.

Dewitt Hutchins is dead as are many of his friends whose names and wings appear on the wall. The management of the Mission Inn has changed; the chapel and its dedication have not.

Here, for the airman, stands a shrine—a chronicled history of aviation.

Roscoe Turner spoke for airmen everywhere when he said, "Great their interest; great their friendship; greater their faith in aviation."

...around the clock
...around the world

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